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ABSTRACT

Begun in 1978 to provide Queensland's South-West and Central Priority Country schools with a comprehensive maintenance and repair service for most audio-visual equipment, the Technical Maintenance Officer Service (TMO) serves 76 schools with total enrollment exceeding 13,000 pupils dispersed over a 469,000 square kilometer area. Two trained officers, equipped with station wagons and a range of specialist equipment, regularly visit each school 3-4 times each year, obviating the problem of transporting delicate electronic equipment to distant service centers and reducing "out of action" time. The officers also offer technical expertise on the selection, use, and treatment of equipment. First year operational expenses totaled $43,000, plus an establishment cost of $16,000 for vehicles and equipment. Salary increases and inflation brought the 1981-82 budget to almost $86,000. A comparison of equipment repairs and breakdown indicates there is no significant differences between downtimes (1.5 week average) for the Central and South-West Regions, but downtimes for non-TMO serviced schools are considerably higher (3.5 weeks). A survey indicates TMO serviced schools are very satisfied. TMO benefits include maximum use of resources, cost savings through not having to freight equipment for repair, and the value of having staff informed about proper equipment care and operation. (NEC)

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PRIORITY COUNTRY AREA PROGRAM EVALUATION SERIES: REPORT NO. 12

Technical Maintenance Officer Service

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Map 1: Schools in the South-West Priority Country Area

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Map 2: Schools in the Central Priority Country Area

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SUMMARY

PROFILE OF THE SERVICE

The following report presents the findings of an evaluation of the Technical Maintenance Officer Service provided in the South-West and Central Priority Country Areas. The principal aim of the Service is to overcome the difficulties faced by country schools in the maintenance and repair of audio-visual equipment.

- The first two maintenance officers were appointed in May 1978 and underwent four weeks orientation training in Brisbane.
- Field operations commenced in June 1978, with one officer based in Charleville and one in Emerald. Following the resignation of the Central Area Officer later in the year, his replacement was based in Rockhampton.
- Each officer is supplied with a station wagon and a range of specialist equipment.
- Since both officers travel extensively throughout their regions on one lane bitumen and dirt roads their vehicles are fitted with 'country packs'. They are also airconditioned to protect the sophisticated electronic equipment which is carried.
- The full cost of providing the Service is met from PCAP funds, although schools may have to pay for more expensive spare parts for equipment not originally supplied by PCAP.
- Through a planned itinerary of visits, these officers are able to offer country schools a comprehensive maintenance service covering most items of audio-visual equipment. This obviates the problem of transporting delicate electronic equipment to distant service centres and thus reduces 'out of action' time.
- In addition to the regular itinerary, an emergency service is provided, on demand, to cope with breakdowns of important equipment.
- During visits, the technical expertise of these officers is available to school staff for advice on the selection, use and treatment of equipment.
- The Central PCAP TMO has a full range of service facilities in the workshop at Rockhampton. This enables him to carry out all but the most complicated audio-visual repairs.
- The South-West PCAP TMO has a limited range of service facilities in the workshop at Charleville. While the majority of repairs can be carried out, those repairs requiring more complicated equipment are sent to Brisbane.
- Between them, these officers service some 76 schools with a total enrolment exceeding 13 000 pupils.
- The 76 schools are dispersed over a total area exceeding 469 000 km^2 and, on average, each school can expect to receive three or four visits each year.

Maps 1 and 2 show the geographical extent of the two priority country areas. It may be noticed that the South-West Priority Country Area extends approximately 750 km from east to west and 400 km from north to south, with a total area exceeding 320 000 km^2. The Central Priority Country Area extends approximately 400 km from east to west and the same from north to south, with a total area exceeding 150 000 km^2.

INTRODUCTION

PURPOSE AND SCOPE OF THE REPORT

The purpose of this report is twofold. Firstly it is a logical consequence of the overall PCAP evaluation program intended to provide:

- a descriptive analysis of PCAP initiatives;
- feedback to PCAP staff about the service being offered;
- information for persons and committees responsible for deciding PCAP policy; and
- a measure of accountability to the Schools Commission in particular and the community in general.

A second impetus for the report came from the implementation of the Commonwealth-funded Loan Video Scheme. The effectiveness or otherwise of the Technical Maintenance Officer Service would clearly have an impact on the system of maintenance and repair to be developed for Loan Video Machines.

With this twofold purpose in mind the report will address itself to the following topics:

1. Methods of operation in the South-West and Central Regions. Issues concerned here will include the use of itineraries and an estimated breakdown of time by activity. Method of operation in both areas will be compared.

2. Costs of the Service.

3. Types of equipment repaired and breakdown rates. In so far as data permits, an attempt will be made here to compare TMO with non-TMO serviced schools. The types of equipment not repaired will also be examined as will the availability and suitability of local country repair centres.

4. Satisfaction with repair and maintenance services. An examination will be made comparing levels of satisfaction between TMO and non-TMO serviced schools. The reaction of TMO schools to the Service and the problems encountered by non-TMO schools in obtaining repair and maintenance service will also be discussed.

5. The impact of extended areas. The effect of recent extensions to PCAP areas on service delivery will be discussed.

EVALUATION METHODS AND PROCEDURES

The method used to obtain primary data for this evaluation included:

1. Survey of schools with and without TMO Services.

2. Participant observation of Service.

3. Interview with TMOs, Principals and Regional Co-ordinators.

4. Document analysis; especially submissions, newsletters, Local Area Committee reports and PCAP Committee meeting minutes.

THE SURVEYS

Data was collected using two questionnaires. One was forwarded to each of the 87 principals of schools receiving the services of a Technical Maintenance Officer employed by the Priority Country Area Program, and another was forwarded to each of the 92 principals of schools, which were similarly isolated and disadvantaged but did not receive the Technical Maintenance Officer Service. A list of schools surveyed is included in Appendix A. The latter group included some PCAP as well as some non-PCAP schools. A further 12 schools in Mount Isa were included in this latter group in order to determine if they experienced the same problems as did the more isolated schools of the area. (Some informal comments received previously indicated a need for investigation.) The questionnaires were forwarded with explanatory letters to both State and non-State primary schools, primary schools with secondary departments and secondary schools. Copies of the questionnaires and explanatory letters for TMO and non-TMO serviced schools are included in Appendixes B and C respectively.

Both questionnaires covered the same two main areas – repairs needed during 1981 (with details relating to whether or not they were carried out), and satisfaction with repair arrangements. Where possible, identical questions were used. In addition to these two major areas, the schools receiving the PCAP Technical Maintenance Officer Service were asked about the frequency of TMOs visits, whether the school or the TMO initiated the visit, and how concerned they would be if the Service were discontinued. The schools not receiving the Technical Maintenance Officer Service were asked for information on who carried out repairs to their equipment, and the problems they experienced in getting those repairs done. That is, both factual and attitudinal data were collected.

Although the Technical Maintenance Officer Service indirectly effects pupils' education, its effect appears unrelated to the Year level of the pupils. Hence it was considered that separating schools with primary pupils from those with secondary pupils, and those with both primary and secondary pupils would serve no worthwhile purpose.

LIMITATIONS OF THE SURVEYS

The most serious methodological limitation of the surveys concerned the reliability of the factual data on repairs. Considerable detail was sought on the actual equipment repaired, number of occasions on which it broke down during the year, and the total number of weeks that it was out of action. In most cases, it appears that such records were not kept by the school. Thus, respondents often relied on their own memory or the memories of other school staff when completing this section. Where repairs were carried out by the South-West TMO, a cross-check was available on the first two of these three points, i.e. equipment repaired and number of breakdowns. However, comparison of the information from schools in the South-West and that from the South-West TMO revealed sizeable discrepencies in many schools. This point is pursued further in Chapter 4.

RESPONSE RATES

Table 1 shows the response rate for large and small schools and the overall response rate in each of the following groups of schools:

- schools serviced by the Central TMO;
- schools serviced by the South-West TMO;
- schools not serviced by a TMO (excluding Mount Isa schools); and
- Mount Isa schools not serviced by a TMO.

This table indicates that the percentages of schools providing usable data in the four areas were: 98 per cent (Central), 78 per cent (South-West), 78 per cent (no TMO – excluding Mount Isa), and 75 per cent (Mount Isa).

Table 1: Response Rates to the Surveys

Response	Schools < 100 pupils		Schools > 100 pupils		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Central						
Schools responding	21	95	20	100	41	98
Schools not responding	1	5	0	0	1	2
Total	22	100	20	100	42	100
South-West						
Schools responding	18	64	17	100	35	78
Schools not responding	10	36	0	0	10	22
Total	28	100	17	100	45	100
No TMO						
School responding	40	74	22	85	62	78
Schools not responding	14	26	4	15	18	22
Total	54	100	26	100	80	100
No TMO (Mount Isa)						
Schools responding	0	0	9	75	9	75
Schools not responding	0	0	3	25	3	25
Total	0	0	12	100	12	100

It should be noted that although the information was gathered in 1982, information on technical maintenance during 1981 was being sought. In many cases the 1982 principal was unable to ascertain what repairs had been needed and/or carried out during 1981 because the staff had changed since then and no records had been kept.

PARTICIPANT OBSERVATION

In order to obtain a broad overview of the Service and to obtain some first hand knowledge of how the Service operates, some time was spent on location with both the South-West and Central TMO. This first hand observation was useful also in identifying problem areas and assessing reactions to the Service. The participant observation of the Service also had the benefit of allowing more accurate interpretation of the data collected by questionnaire.

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CHAPTER 1

METHODS OF OPERATION

Methods of Operation in the South-West Region

The South-West Technical Maintenance Officer operates from a workshop in Charleville. The workshop has a range of basic equipment and spare parts which allow running repairs to be made on items of audio-visual equipment.

The primary means of Service delivery in the South-West is through a regular but flexible itinerary of visits to individual schools. Because of the flexibility needed to cope with unexpected circumstances, such as the weather and emergency breakdown, the TMO believes that the use of a set itinerary is impractical. In 1979 the TMO trialled the use of a set itinerary. Schools were grouped into geographical areas which were serviced according to a prepared timetable. The TMO would spend one week on visits to schools and one week at base. This system, however, proved difficult to operate because of frequent changes to the itinerary which were necessitated by poor weather conditions and emergency breakdowns. Hence the system was abandoned in favour of a regular but flexible itinerary. The South-West TMO has grouped schools into 'runs'. Each 'run' consists of a group of schools in the same geographical area and is organised so that all schools in the run can be serviced in a four-day period. In order to give a clearer picture of the TMOs operations, an extract from his diary is attached at Appendix D. In the event of poor weather conditions or emergency breakdowns the TMO skips the scheduled run and moves on to either the run in which the emergency is located or a run which is not affected by poor weather conditions.

In recent times schools normally had no forewarning of the exact day of the TMOs visit. Items for repair were usually set aside so that the TMO was able to assess the workload and estimate the time needed at the school. Overall this system of Service delivery in the South-West appears to be effective although some schools wished to have prior notification of the TMOs visit. The most common reasons given for wanting prior notification was so that teachers could arrange to be free on that particular day in order to discuss maintenance problems and other technical matters with the TMO and so that all items needing repair could be set aside.

Late in 1982 the South-West Co-ordinator and the TMO developed a set itinerary to be trialled and refined during 1983. It is hoped that this arrangement will better meet the needs of schools in the region.

The TMOs time is divided between two major activities; visiting schools and workshop activities. Visiting schools is the more time consuming of these and involves three aspects; travelling, fixing equipment and advising staff. Workshop activities include fixing equipment, and administration.

As well as his normal duties the South-West TMO also makes irregular visits to some North-West PCAP schools. In early 1982 two trial flying visits were made to the North-West schools. The two trips, which covered a total of seven days, enabled one visit to be made to each school. Although the service was greatly appreciated it is unlikely that such one-off visits will have any significant impact on the problems faced by North-West schools in obtaining service for items of audio-visual equipment.

Further difficulties are envisaged in providing even a limited service to the North-West with the South-West TMOs involvement in both the Loan Video Scheme and the portable colour video studio in the South-West PCAP Region. The implications of the Loan Video Scheme will be discussed later in this report. The aims and objectives of the portable colour video studio are to:

1. establish an additional means of communication within an isolated region;
2. enrich the curriculum in s" subject areas;
3. motivate students through a rising level of interest caused by active participation in the development of the learning process;

4. introduce children to an active use and an appreciation of the video/television medium;
5. improve and motivate school-to-school co-operation and interaction;
6. extend the effectiveness of existing PCAP units, e.g. Mobile Field Study Unit, Mobile Manual Arts Unit;
7. provide a valuable resource to community groups in the area; and
8. expand the flexibility of existing video recorders already situated in schools.

The proposal to carry the equipment with the TMO offers the following advantages:

1. Regular maintenance will be assured.
2. The equipment will be kept operational while in use, increasing satisfaction and reducing the frustration caused by equipment failures in areas remote from service.
3. Technical production matters such as lighting, choice of microphones, and editing should be no problem.
4. People who wish to learn to operate the equipment can be instructed on the spot by the TMO.
5. Problems in transporting the equipment throughout the area will be overcome with a coverage of four to six times a year. All groups have access to the equipment.

Methods of Operation in the Central Region

The Central Technical Maintenance Officer operates from a workshop in Rockhampton. The workshop was originally set up in the same manner as the South-West workshop with a wide range of basic equipment and spare-parts to allow running repairs to be made on items of audio-visual equipment. However, since the Central TMO has a smaller area to cover than the South-West TMO, he is able to spend considerably more time in the workshop. As a result, a fully equipped workshop was set up in Rockhampton in 1980. The establishment costs of the workshop including the major items of equipment can be found in Appendix E.

Since the establishment of the workshop the TMO has been able to effect many repairs which would otherwise have been sent to Brisbane. As a result the workshop has proved beneficial in reducing both freight costs and the downtime for equipment in schools.

The primary means of service delivery in the region is through a regular itinerary of visits to each of the 37 schools. Figure 1 shows the TMO's 1982 itinerary. The TMO spends approximately 40 per cent of his time in the workshop and the rest on visits to schools. The basic difference between the South-West and Central methods of operation is that the Central TMO has a more rigid itinerary and operates a fully equipped workshop.

On average, the Central TMO receives three telephone calls reporting equipment breakdown each day he is in the workshop. The majority of these calls can be dealt with adequately over the telephone. Some require equipment to be freighted to the school and a few require emergency attention.

In the event of an emergency breakdown or poor weather conditions, the Central TMO takes the same action as the South-West TMO. The TMO delays the scheduled circuit and moves on to either the circuit in which the emergency is located or to a circuit not affected by the poor weather conditions. When a school with an emergency breakdown is located in close proximity to the scheduled circuit, the TMO is often able to make a diversion to the school without disrupting his itinerary.

As with the South-West TMO, the Central TMOs time is divided between visiting schools and workshop activities. A full discussion of the breakdown of both TMO time and activities can be found in the next section.

Circuit 1 Schools	Circuit 2 Schools	Circuit 3 Schools
Theodore St Lawrence Flaggy Rock Carmila West Hill Clarke Creek Valkyrie Coppabella Nebo	Duaringa Dingo Alsace Bluff Blackwater Blackwater North Blackwater High Comet	Dysart Dysart High Moranbah Moranbah East Moranbah High Mackenzie River Middlemount
Circuit 4 Schools	**Circuit 5 Schools**	**Circuit 6 Schools**
Woorabinda Bauhinia Rolleston Orion Tresswell Gindie Springsure Springsure Catholic	Clermont Clermont Catholic Mistake Creek Kilcummin Capella Oaky Creek Tieri (Mobile Classroom Unit)	Emerald Emerald Catholic Emerald North Emerald High Anakie Alpha Jericho (Speech Therapy Unit)

Proposed dates for visits

Dates	*Schools*	*Dates*	*Schools*
25.1.82 – 12.2.82	Rockhampton workshop	7.6.82 – 11.6.82	Circuit 4
15.2.82 – 19.2.82	Circuit 1	15.6.82 – 18.6.82	Circuit 5
22.2.82 – 26.2.82	Circuit 2	21.6.82 – 25.6.82	Circuit 6
1.3.82 – 5.3.82	Circuit 3	28.6.82 – 9.7.82	Rockhampton workshop
8.3.82 – 19.3.82	Rockhampton workshop	12.7.82 – 16.7.82	Circuit 6
22.3.82 – 26.3.82	Circuit 4	19.7.82 – 20.8.82	Rockhampton workshop
29.3.82 – 2.4.82	Circuit 5	23.8.82 – 27.8.82	Circuit 1
4.4.82 – 8.4.82	Circuit 6	30.8.82 – 3.9.82	Circuit 2
12.4.82 – 16.4.82	Rockhampton workshop	6.9.82 – 10.9.82	Circuit 3
19.4.82 – 23.4.82	Circuit 6	13.9.82 – 17.9.82	Circuit 4
27.4.82 – 30.4.82	Rockhampton workshop	20.9.82 – 24.9.82	Circuit 5
2.5.82 – 7.5.82	Circuit 1	27.9.82 – 8.10.82	Rockhampton workshop
10.5.82 – 14.5.82	Circuit 2	11.10.82 – 15.10.82	Circuit 6
17.5.82 – 21.5.82	Circuit 3	18.10.82 – 22.10.82	Circuit 6
24.5.82 – 4.6.82	Rockhampton workshop	25.10.82 – 10.12.82	Breakdown service

Figure 1: Central Region, 1982 Circuit Itinerary for Technical Maintenance Officer

The methods of operation in the Central region have proved to be very successful with all schools receiving at least three visits per year.

Breakdown of Time and Activities

The different methods of operation of the two TMOs is reflected in the breakdown of time spent on various activities. Fig. 2 gives a diagramatic representation of their time breakdown.

As can be seen from Fig. 2, the Central TMO spends almost twice as much time in the workshop as the South-West TMO and 17 per cent less time on visits to schools. As has already been seen, this is a direct result of the smaller geographical size of the area and the existence of a fully equipped workshop. As would be expected the Central TMO spends less time travelling (11 per cent) and less time actually in schools (6 per cent). An indication of the vast distances the South-West TMO must travel is evidenced by the fact that in the first quarter of 1982 he travelled almost 1000 km per week. While in schools both TMOs time is spread evenly between repairing equipment and advising staff. Advice to staff includes; explaining the full extent of a machine's capabilities; showing basic maintenance procedures; and giving advice concerning the best types and models for new equipment purchases. Both TMOs found that many breakdowns could be averted if staff undertook basic maintenance precautions.

Although both TMOs believed that staff education was important there was always a difficulty with high staff turn over. In the majority of cases TMOs found that it was necessary to retrain a new staff member each year.

As well as their official duties, the TMOs perform an important social function. They provide personal contact for isolated teachers and help reduce their sense of isolation by keeping them informed about both social and educational activities in other areas.

The majority of repairs are carried out at the school and equipment which cannot be repaired on the spot is taken back to the workshop. Workshop repairs are necessary if the TMO requires more parts, special tools or other equipment. The length of time required to effect repairs is another major consideration in deciding whether or not to repair items on the spot. In some small towns overnight accommodation is a problem and time consuming repairs have to be taken back to the workshop. In assessing whether or not to repair an item at the school the TMO takes into account the school's ability to function without the equipment. Thus repairs are more likely to be effected in the workshop if:

- the school has an adequate supply of similar equipment (e.g. if it is one of many cassette players);
- equivalent equipment can be loaned to the school by the TMO; and
- the school is close to the TMOs base and equipment can be returned without undue delay.

Neither TMO is able to provide a full service for all equipment. Both provide a variable repair service as indicated by the following:

Full Repairs	Colour monitors, radio/cassette players, three-in-ones, spirit duplicators, slide projectors, headphones, loop systems and heat copiers.
Limited Repairs	Gestetners, 16 mm projectors and video machines.
Minor Repairs	Photocopiers, electroscanners.
No Repairs	Typewriters and electrical items (except for obvious faults e.g. missing screws). The TMOs do not hold electricians tickets and are therefore not authorised to carry out electrical repairs or checks in schools.

If the TMO is unable to repair an item either because of lack of special equipment or lack of specialised knowledge the item is freighted to Brisbane for repair. The TMO is also authorised to recommend equipment write off. This is done by means of the standard form appearing in Appendix F.

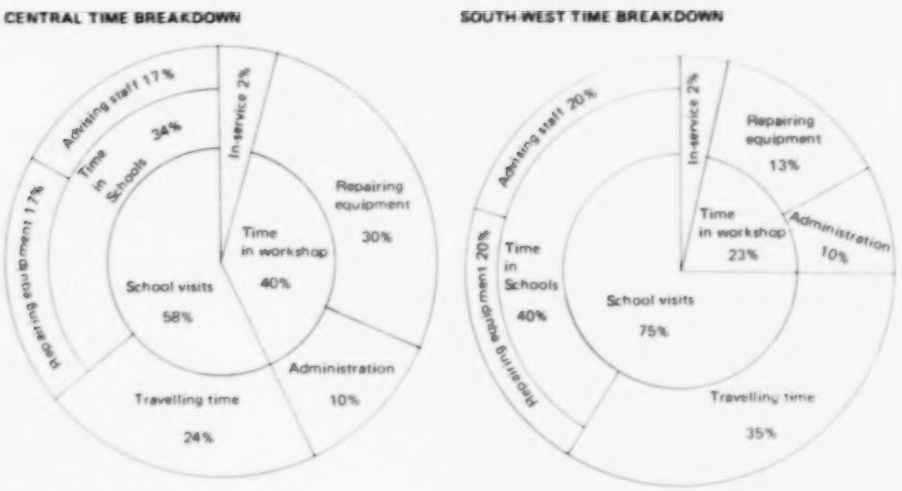

Figure 2: Breakdown of TMOs' Time

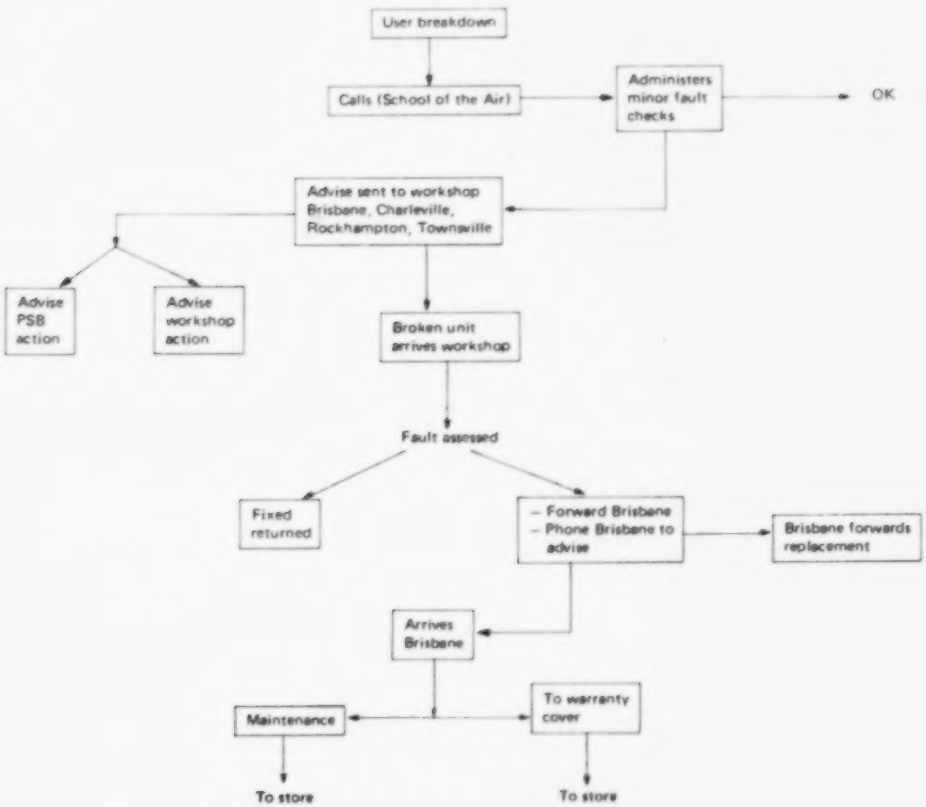

Figure 3: Proposed Flow Chart for TMOs' Involvement in Loan Video Scheme

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While in the workshop, both TMOs carry out administrative work as well as equipment repairs. About 10 per cent of their time is spent on administrative work including ordering parts and equipment, arranging freight of equipment, keeping records of jobs and supplying regular reports to regional committees.

Only 2 per cent of the TMOs time has been spent on courses. In the main, this 2 per cent, refers to the induction period held in Brisbane before the TMOs took up their appointment. Neither TMO feels that time spent on professional development courses has been sufficient although both were satisfied with the induction period in Brisbane. Clearly more time is needed each year for TMOs to keep abreast of developments in their field. Isolation brings its own set of problems for the TMO. Since they work alone, outside major settlements, they have no formal or informal contact with other similarly qualified officers. This lack of contact precludes the possibility of updating skills and knowledge even through the informal discussions which would take place among the technical officers of larger organisations. Since many major companies provide courses for technicians, especially on release of new products, it may be worthwhile to examine the possibility of having TMOs attend those courses which they find relevant.

Implications of the Loan Video Scheme

Maintenance arrangements for the Commonwealth-funded Loan Video Scheme (LVS) will involve the participation of both the South-West and Central PCAP TMOs as well as a Departmental maintenance officer based in Townsville. Because both PCAP TMOs work a full schedule for most of the year, the proposal for their involvement in the Loan Video Scheme ensures a controlled workload (See Fig. 3).

It should be noted that this proposal has not yet been adopted.

As outlined in the flow chart in Fig. 3, the TMO will not be required to travel to properties to effect repairs nor is he obliged to repair items when they arrive at the workshop. If the TMO is unable to effect repairs at the workshop either because of PCAP workload or because of lack of particular equipment or skills then the unit is sent to Brisbane.

One possible difficulty with the TMOs involvement in the LVS concerns the situation where a number of sets break down over a short period of time. This situation could cause difficulties in the provision of exchange sets and in the packaging and freighting of sets to Brisbane. Such occurrences are more likely to occur later as equipment ages rather than in the initial stages.

Overall, the maintenance of Loan Video sets should not, initially at least, have any significant effect on the workload of the PCAP TMOs. But any proposal for maintenance assistance should take into account the expected increase in maintenance requirements over time.

CHAPTER 2

COSTS

The Technical Maintenance Office Service was introduced into the Central and South-West Priority Country Areas in 1978. The establishment cost for the 1977–78 financial year was $16 000 for both TMOs.

	$
Vehicle purchase	8 000
Tools, testing equipment, spares	8 000
Total establishment cost	$16 000

Total costs for the first full year of operation (78–79) were $43 000. Salaries accounted for $26 000 and the balance of $17 000 accounted for equipment, spare parts, vehicle running costs, and miscellaneous items.

Over the five years since the Service began operating, costs have increased significantly. The two major factors influencing cost are inflation and reclassification of personnel.

The comparative budget for the 1981–82 financial year is as follows:

Technical Maintenance Officer (South-West)

	$	
Salary	17 600	
Technical equipment and parts	5 000	
Travel	7 000	*
Vehicle new/replacement station wagon	7 500	
Vehicle registration/insurance	300	
Vehicle running costs	3 500	
Incidentals	1 500	
	$42 400	**

* As well as this $7000, $4000 is ear-marked for flying visits to North-West PCAP region schools.

** This figure represents the cost of providing a technical maintenance service to the 39 schools in the South-West PCAP region with a total enrolment of 5550 pupils.

Technical Maintenance Officer (Central)

	$	
Salary	18 400	
Technical equipment and parts	6 000	
Travel	5 500	
Vehicle new/replacement station wagon	7 500	
Vehicle registration/insurance	350	
Vehicle running costs	3 500	
Incidentals	1 840	
	$ 43 090	*

* This figure represents the cost of providing a technical maintenance service to the 37 schools in the Central PCAP region with a total enrolment of 7450 pupils.

Including the $4000 ear-marked for travel to the North-West PCAP region schools, the total TMO budget for the 1981-82 financial year was $89 490.

CHAPTER 3

EQUIPMENT REPAIRS AND BREAKDOWNS

Both TMO and non-TMO serviced schools were asked to record the number of breakdowns which occurred for various items of equipment during the 1981 school year. They were also asked to record the length of downtime for each piece of equipment. Using the non-TMO serviced groups as a control it was planned to obtain a measure of the effectiveness of the Technical Maintenance Officer service.

Type of Equipment Repaired and Number of Breakdowns

South-West Schools:

One of the major constraints in analysing this section of the data is determining the validity of the data itself. After collating information gathered through the questionnaire a cross check was made with the South-West TMOs diary on two random items. The cross check revealed that schools recorded 25 per cent more video cassette recorder breakdowns and 36 per cent less film/slide projector breakdowns than were documented in the diary.

On the basis of this information it was decided to cull the TMOs diary for data concerning all types of equipment. The resulting comparisons are presented in Table 2.

Table 2: South-West Breakdowns by Source of Data

Item	No. of Breakdowns	
	Questionnaire Data	Diary Data
Video cassette recorders	59	44
Overhead projectors	10	50
Cassette recorders and radios	55	130
Copiers/duplicators	44	54
Record players/3 in 1's/ accessories	31	42
Film/slide projectors	14	22
Television sets/accessories	9	21

As mentioned earlier in this report a major difficulty with the questionnaire data is that principals were asked to recall breakdowns over a twelve month period. Since the vast majority of schools had no official record of repairs made by the TMO they were entirely reliant on thier memory as well as that of their staff. The hazards of relying on a respondent's memory, especially for factual data, are well documented.

> For the designer of retrospective surveys, the most obvious message from the psychology of human memory is that forgetting will occur and that this must place major constraints on the interpretation of any results. Such forgetting will be maximal when asking for details of one out of many similar incidents, since the various incidents will inevitably confuse with each other . . . People tend to remember in terms of their previous assumptions and beliefs. Memory is essentially a reconstructive process, and subjects will try to make sense of a given incident, often recalling their interpretation rather than what they actually literally observed.
>
> (Moss & Goldstein 1979, p. 25)

After discussing the discrepancies with the South-West TMO it became clear that the most logical explanation for the difference was human error. Since the TMO updates his diary after each school visit it is most likely that the diary figures for breakdowns are the more accurate.

As can be seen from Table 2, breakdowns for all equipment except VCRs were underestimated by schools. The most probable explanation for the overestimation of VCR breakdowns is that they are frequently used and their breakdown would cause greater disruption to planned lessons than would other pieces of equipment. Furthermore, a school is unlikely to have a second VCR to utilise in the event of a breakdown whereas with items such as cassette recorders, radios, and record players, back-up equipment is most often available. The combined effect of disruption and lack of back-up facilities is likely to result in an exaggeration of breakdown frequency when recalling the frequency of breakdown for such items of equipment.

Since the Central TMO does not keep a diary it was not possible to check the questionnaire data for the Central Priority Country Area.

On the basis of the questionnaire data for both South-West and Central PCAP Regions there were no major differences between the downtimes for various equipment. Although Central downtimes were all rated higher than the South-West they were not more than 1.3 weeks higher and this difference could be accounted for by errors in the original data.

Due to lack of records it was also impossible to check the questionnaire data for non-TMO serviced schools. The comparative data for TMO and non-TMO serviced schools based on questionnaire returns, is presented in Table 3.

Table 3: Numbers of Breakdowns and Downtime

Item	TMO Serviced Schools		Non-TMO Serviced Schools	
	No. of Breakdowns	Average Downtime	No. of Breakdowns	Average Downtime
Video cassette recorders	84	1.2 wks	29	6.6 wks
Overhead projectors	19	1.6 wks	26	2.6 wks
Radio/cassette recorders	85	1.9 wks	99	2.7 wks
Copiers/duplicators	52	1.1 wks	79	3.0 wks
Record players	48	1.5 wks	25	2.2 wks
Film/slide projectors	21	1.4 wks	36	4.8 wks
Television sets/accessories	13	1.4 wks	10	2.1 wks

Although the data on breakdowns has proved unreliable it is unlikely that errors in breakdown estimates alone would account for the large differences in average downtime between TMO and non-TMO serviced schools seen in Table 3.

Overall, the downtime for non-TMO serviced schools was considerably higher than for schools with a TMO. The shortest downtime for non-TMO schools was 2.1 weeks for television sets and accessories and for TMO schools it was 1.1 weeks for photocopiers and duplicators. The longest average downtime for non-TMO schools was 6.6 weeks for video cassette recorders and for TMO schools, it was 1.9 weeks for radio cassette recorders. Even if the percentage error in recording the number of breakdowns was not equivalent, for both TMO and non-TMO schools the variation would have to be in the order of 130 per cent before we could reject the hypothesis that non-TMO serviced schools suffer considerably longer downtimes as a result of equipment breakdown than do schools serviced by a TMO. Clearly then the TMOs in the Central and South-West Regions have had a significant impact on the downtime for equipment. In the case of all types of equipment repaired by the TMOs the average downtime was 1.5 weeks and for non-TMO schools it was 3.5 weeks.

Although it was initially expected that the non-TMO serviced schools in Mount Isa would experience a lower average downtime this did not prove to be the case. The downtime for VCRs, OHPs and film and slide projectors was higher for Mount Isa schools and downtime for record players, photocopiers and duplicators, radio cassette recorders and television sets and accessories was higher for non-TMO schools outside Mount Isa. However the variation in downtime between Mount Isa schools and other non-TMO schools was not greater than 19 per cent for any single item of equipment. A variation of this magnitude would most likely be the result of school errors in recording data. Thus on the basis of existing data Mount Isa schools are no better off with regard to equipment maintenance and repair than other schools not serviced by a TMO. It must be noted however that while Mount Isa schools may experience a similar downtime they are better placed with regard to transportation of items to larger, coastal cities and are more likely to have access to service centres where at least minor repairs can be carried out.

Type of Equipment Not Repaired

The Technical Maintenance Officers provide only a minor repair service to photocopiers and electroscanners since they do not have the requisite skills or equipment necessary to carry out full repairs. No repair service is provided for typewriters or electrical items of equipment (except for obvious faults, e.g. a missing screw). The repair of typewriters is a specialist field in which the TMOs are not trained and since the TMOs do not hold electricians' tickets they are not authorised to carry out electrical repairs or checks in schools.

Conclusions

Despite the limitations of the data it is apparent that there is no significant difference between downtimes for the Central and South-West Regions, but downtimes for non-TMO serviced schools are considerably higher than would be expected if they had the services of a TMO.

As the data available is unreliable it is impossible to present accurately, information on the effect of the Technical Maintenance Officer service.

This fact points to a need for creating and maintaining an accurate data base on major items of equipment. As well as enabling future evaluation of the service to be more accurate, such a data base would enable more accurate predictions regarding equipment replacement, and would allow the monitoring of various models' performance.

Availability and Suitability of Local Repair Shops

The availability of local repair shops in isolated areas is extremely limited. The South-West TMO estimates that there are only six commercial repair facilities for technical equipment in the South-West Priority Country Area. All these repair shops operate as small businesses and perform only basic television and radio repairs. Two shops undertake basic video repairs. None have the facilities or the qualified staff to undertake major repairs especially on more sophisticated items of equipment.

The Central Priority Country Area is in a similar position to the South-West, with the TMO estimate of only five local repair shops in the area. As in the South-West, these shops undertake only basic television, radio and tape recorder repairs. As well as constraints on the number of repair shops, two of these shops are inclined to give service priority to equipment they have sold themselves. Clearly then the availability and suitability of commercial repair shops in the two Priority Country Areas is not adequate to meet the repair and maintenance needs of schools.

In order to obtain an indication of available suitable local repair shops in non-TMO serviced areas, schools were asked to give the location of the repairer for various items of equipment. Of the 127 items repaired, 30 per cent were repaired locally, 30 per cent at a city centre and 39 per cent at a country centre. Of the 30 per cent of items repaired locally, only about one third were repaired by a qualified technician. The other two thirds were repaired by either a parent or teachers at the schools. Clearly the majority of repairs were effected outside the local area indicating the lack of suitable local repair facilities.

The lack of repair facilities in non-TMO serviced areas is also indicated by the fact that 60 per cent of the schools surveyed had items of equipment left unrepaired at the end of the year. The most common reason for this situation was that freight costs added to repair costs often made the exercise highly cost inefficient. Thus many items of equipment are simply put aside.

Overall, the availability and suitability of repair shops is limited in both TMO and non-TMO serviced areas. The effect of this situation is that schools cannot rely on locally available facilities for the repair and maintenance of equipment.

CHAPTER 4

REACTIONS TO THE SERVICE

Satisfaction with Existing Repair and Maintenance Services

Overall, TMO serviced schools were very satisfied with the service. In reply to the question 'How satisfied is your school with the service?', the following information emerged.

Table 4: Satisfaction of Schools with TMO Service

Satisfaction	Priority Country Areas	
	South-West %	Central %
Very satisfied	80	61
Satisfied	14	15
Fairly satisfied	3	7
Dissatisfied	0	2
No response	3	15
	N = 35	N = 41

From Table 4 it can be seen that there was a very high degree of satisfaction with the Technical Maintenance Officer Service. Further evidence of this satisfaction can be found in the fact that 98 per cent of all schools surveyed in both Priority Country Areas expressed great concern over any thought that the service be discontinued.

The level of satisfaction on non-TMO serviced schools with their existing repair arrangements is presented in Table 5. This Table indicates that schools in the major centre of Mount Isa are considerably more satisfied with their existing repair arrangements than other more isolated schools. Even though Mount Isa schools experienced a similar downtime to non-Mount Isa schools, it is clear that the better transportation links available in Mount Isa put these schools in a better position than other non-TMO serviced schools.

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Table 5: Satisfaction of Schools with no TMO Service

Satisfaction	Non-TMO Schools	
	Mount Isa %	Non-Mount Isa %
Very satisfied	22	0
Satisfied	22	14
Fairly satisfied	44	8
Dissatisfied	11	76
No response	0	2
	N = 9	N = 64

Even though Mount Isa schools were somewhat more satisfied than other non-TMO schools they were not as satisfied as schools with the services of a TMO.

Reaction of TMO Schools to the Service

Respondents from both the South-West and Central Priority Country Areas were asked how the Service had assisted the school.

In reply to this question the most frequent comment referred to the advantage of having equipment maintained in working order for a greater part of the school year. With the resultant decrease in downtime teaching, time involving the use of audio-visual equipment had become more effective and, as many respondents pointed out, the school could make maximum use of it's resources. The time saved by not having to freight equipment to larger city or country centres was also frequently mentioned.

Another advantage mentioned was the cost saving made by not having to freight equipment for repairs. Less freightage reduced not only transport costs but also extra repair costs resulting from equipment frequently damaged in transit.

As well as the more obvious advantages, a number of schools also emphasised the value of having the TMO inform staff about the proper care and operation of equipment. Also valuable was advice from TMOs concerning the ways in which equipment could be more fully utilised.

An unanticipated consequence of the TMOs work is reflected in the fact that some schools found that their P & C Associations were more willing to expend funds on items of equipment because of the availability of a maintenance service.

Finally, many respondents referred to the 'personal touch' and 'friendliness' of the TMOs who fulfilled an important social as well as practical function in isolated areas.

The following comments are representative of the many made by respondents:

Equipment which would have been out of action is brought back into use; Repair bills are out; Large items of equipment which are hard to transport are repaired on the spot.

Service has enabled 95 per cent of equipment to be functioning at all times, previously it was 50 per cent; It helps to provide that quality of teaching found in city areas; Demonstrations and advice are more helpful.

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Regular checks pinpoint problems early; Machines operate longer and more efficiently; Repairs can be made on the spot without long and harmful transport service (dust, port, roads); Eliminated inconvenience of transporting equipment large distances for repair, many a time to return operational.

It has resulted in having all a-v gear in working condition during the majority of the year without lengthy delays in sending the equipment to larger centres. It has meant that the P & C Association is more willing to buy 'complicated' a-v gear without worrying about repair costs.

Although all respondents made positive comments about the service, some requested that the service be extended to include such items as typewriters and music equipment as well as more frequent visits. Since specialised skills are needed to service the items of equipment mentioned it is not possible for the TMO to undertake these repairs. The possibility of more frequent visits is restricted by the number of schools in an area, travelling time and workshop load.

The only criticism to be made by respondents, referred to the lack of prior notice for TMO visits in the South-West. Five respondents commented on the value of prior notification. The following are representative of their comments:

We would like to be advised in advance of visits, this would prevent us from sending a machine away for repair just before the TMO visits and would allow us to prepare a list of problems; We would appreciate at least a week's notice of the proposed visit; Perhaps an itinerary could be forwarded at the beginning of each semester; It is a very useful scheme and more benefit could be derived from it if we had a bit of notice.

The South-West TMO has since begun a trial set itinerary which will be reviewed and refined after the first twelve months of use. This action should solve problems caused by lack of warning of the TMO visit.

It is clear from the reactions of schools with a TMO that the Service is highly valued and successful. Many of the problems overcome by the TMOs are still faced by schools without the Service. These problems are discussed in the following section.

Problems Faced by non-TMO Serviced Schools

Non-TMO serviced schools were asked about the problems they faced in having equipment maintained and repaired. Altogether 119 separate comments were made, emphasising the following problems listed in Table 6.

Table 6: Problems Faced by non-TMO Serviced Schools in Having Equipment Maintained and Repaired

Problems	%
Excessive downtime for equipment	25
Excessive cost of transport and repairs	18
Lack of suitable local technicians	15
Lack of suitable transport	13
Damage to equipment in transit	13
Lack of necessary parts	10
Very few or no problems	6
	N = 119

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The following comments are representative of those made by respondents.

We tend to put up with less than the best because of the inconvenience, loss of use, and freight costs resulting from sending machines to Brisbane for repair.

Equipment is particularly prone to disfunction because of heat and dust; Most repairs are effected in Brisbane so freight and packing become a real factor? Several items have arrived back damaged; The time involved is also considerable; Minor repairs, because of the lack of local technicians also involve the same freight, packing and time problems of major repairs.

Repairs are not the only problem; Correct maintenance is a bigger problem and if machines had this maintenance, repair costs would be greatly reduced.

It is obvious that schools without the services of a TMO have severe difficulties with the maintenance and repair of equipment. These difficulties are primarily those of cost and downtime and are a result of the distance factor of isolation. We have already seen that these problems can be minimised by the Technical Maintenance Officer Service. The severity of difficulties faced by schools without the service emphasies the success of the Service.

CHAPTER 5

EXPANSION OF THE SERVICE

The Impact of Extended Areas on TMO Serviced Schools

The extension of the three existing PCAP areas and the declaration of the new Northern Priority Country Area were announced in August 1983.

The following table shows the percentage increase of schools and areas in the two TMO serviced areas of Central and South-West.

Table 7: Increase in Schools and Areas for South-West and Central

Area	Schools Increase			Areas Increase		
	Old	New	% Increase	Old	New	% Increase
South-West	40	78	95	318 500	378 092	19
Central	44	65	48	150 500	166 209	10

Before the South-West area was extended, the TMO was able to provide up to six visits to each school per year. However, in order to provide a reasonable service to the 38 new schools, the maximum number of visits to the old schools has been reduced to four per year and new schools will receive two visits per year. It is felt at present that this arrangement will provide for a satisfactory service in the South-West. But it will be necessary to monitor the effectiveness of the service over at least a two year period in order to establish the effect of adjustments to the level of service provided.

As can be seen from Table 7, the increase in both schools and area is considerably less for the Central Priority Country Area. The increase of 21 new schools however, has necessitated a change in the service pattern for the area. Prior to the extensions to the Central Priority Country Area each school received three visits per year. This level of service is to be maintained and the 21 schools in the extended Central Area will also receive three visits per year. In order to be able to provide this frequency of service the TMO has reduced the actual length of visits to some schools.

Top priority in all schools is given to VCR equipment while second priority is given to the needs of small schools in relation to other items of audio-visual equipment. As a result of this policy the schools in the following centres were asked to have items of audio-visual equipment other than VCR repaired through local agencies: Emerald; Blackwater; Dysart; Moranbah; Biloela; Moura; and Theodore.

As with the South-West it will be necessary to monitor the effectiveness of the service over a two year period in order to establish the effects of adjustments to the level of service provided.

In order for such a comprehensive evaluation to be undertaken, an accurate record will need to be kept for:

- the number of breakdowns for various pieces of equipment;
- the number of days for each each machine is inoperable;
- the frequency of use of the machine;
- the age of the machine; and
- details of repair arrangements.

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Obviously the extension of areas with no corresponding increase in staff means that the same level of service cannot continue to be provided. There are also further constraints on maintaining a high level of service. Firstly, as machines age, wear and tear will cause the more frequent breakdown of machines hence increasing the TMOs repair time. As this chain of events takes place and the TMO uses up his available time at schools, further adjustments will need to be made to the level of service.

Secondly, although the extent of the TMO's involvement in the Load Video Scheme has not yet been decided, allowance must be made for the fact that participation in the scheme will place demands, however minimal, on the TMO's time.

The Impact of Extended Areas on non-TMO Serviced Schools

The North-West and the newly declared Northern Priority Country Areas do not have Technical Maintenance Officers. The fact that a need exists in these areas has been clearly demonstrated by the increased downtimes and problems faced by non-TMO schools.

The extended North-West Area has 51 schools spread over an area of approximately 660 000 km^2 and the new Northern Area has 53 schools spread over approximately 307 000 km^2. Given the comparative size of the South-West and Central Areas (78 schools – 378 000 km^2 and 65 schools – 166 000 km^2 respectively) it would be reasonable to expect that one TMO located in the Northern Area could provide a similar service to that in the South-West and Central Areas. A major difficulty to be overcome in the Northern Area would be transport problems associated with the wet season.

Although the North-West Area has fewer schools than either South-West or Central, it is almost double the size of the next largest area which is the South-West. Given the vast distances which have to be covered, it is unlikely that a single TMO would be able to provide the same level of service available in the South-West and Central Areas unless extensive use was made of air services.

CHAPTER 6

CONCLUSIONS

Chapter 2

Overall the Technical Maintenance Officer Service has proved to be effective. Although the methods of operation differ somewhat between Central and South-West Areas, schools in both areas were satisfied with the service. The only problem raised was the lack of prior notification of visits to South-West schools. A number of schools wanted prior notification in order that teachers could arrange to be free to discuss repair and maintenance problems with the TMO. Another reason for wanting advanced warning of visits was so that all items needing repair could be set aside. In response to this situation the South-West Co-ordinator and the TMO developed a set itinerary late in 1982. This itinerary will be trialled and refined in 1983.

In examining the components of time and activities for the TMOs it would found that the Central TMO spends almost twice as much time in the workshop as the South-West TMO and 17 per cent less time on visits to schools. This situation was seen to be the direct result of the smaller geographical size of the Area and the existence of a fully equipped workshop. Further examination of the time components showed that little time was available for professional development courses for TMOs and both TMOs felt that there was a need to update their skills. Clearly more time needs to be allocated in order for TMOs to keep abreast of developments in their field.

Although the extent of the TMOs' involvement in the Load Video Scheme is not yet clarified, proposals for maintenance assistance should take into account the expected increase in demand on TMOs' time.

Chapter 4

A major difficulty in analysing data on equipment repairs and breakdowns was the validity of the data. Cross checks between questionnaire data and data recorded in the South-West TMO's diary showed that breakdowns for all items of equipment, except VCR's, were underestimated by schools.

By using comparative data for TMO and non-TMO serviced schools, based on questionnaire data it was possible to show that schools without the service suffered considerably longer downtimes as a result of equipment breakdown. In the case of all types of equipment repaired by TMOs, the average downtime was 1.5 weeks and for non-TMO schools it was 3.5 weeks. Despite the limitations of the data it was also apparent that there is no significant difference between downtimes for the Central and South-West Areas.

The difficulties encountered as a result of an inadequate data base point to the need for creating and maintaining an accurate data base on major items of equipment. As well as allowing more accurate future evaluation of the service such a data base would enable more accurate predictions regarding equipment replacement and would allow the monitoring of an individual model's performance.

A major factor confounding service delivery in all areas is the lack of suitable local repair shops. While this situation is less of a problem in areas serviced by a TMO, areas without the service have the already significant problems of distance and isolation compounded.

Chapter 5

Overall, schools serviced by a TMO were very satisfied with the service. The most positive aspects of the service which respondents commented on were:

- the advantage of having equipment maintained in working order for a greater part of the school year;
- more effective teaching time;
- maximum use of resources;
- cost savings through not having to freight equipment for repair;
- the value of having staff informed about the proper care and operation of equipment; and
- the value of advice on how to fully utilise equipment.

Schools not serviced by a TMO faced severe difficulties with the maintenance and repair of equipment. These difficulties included:

- excessive downtime for equipment;
- excessive cost of transport and repairs;
- lack of suitable local technicians;
- lack of suitable transport;
- damage to equipment in transit; and
- lack of necessary parts.

Chapter 6

Prior to the extensions announced in August 1982, the South-West TMO provided up to six visits to each school per year and the Central TMO provided three visits to each school per year. In order to provide a reasonable service to the 38 new schools in the South-West Area the maximum number of visits to the current schools has been reduced to four per year and new schools will receive two visits per year. In the Central Area the 21 new schools as well as the current schools will continue to receive three visits per year although time spent in some schools will be reduced. This reduction in time will be made by asking schools in major centres to have items of audio-visual equipment, other than VCRs, repaired through local agencies.

In both the South-West and Central Areas it will be necessary to monitor the effectiveness of the service over a two year period in order to understand the effects of adjustments to the level of service provided.

The impact of extensions to the North-West Area and the declaration of the new Northern Area is to effectively increase the size of the problem to be addressed. The fact that a need exists in these areas was clearly demonstrated by the increased downtimes and problems faced by non-TMO schools. If this need is to be met a TMO located in the Northern Area could provide, for the 53 schools there, a similar service to that provided in the South-West and Central Areas. The major obstacle to providing a similar service to the 51 schools in the North-West Area is its size. Although the North-West Priority Country Area has fewer schools than South-West or Central, at 660 000 km^2 it is almost double the size of the South-West, which is the next largest area. In order for a single TMO to provide a reasonable service in this area extensive use would need to be made of air services.

REFERENCE

Moss, L. & Goldstein, H. , *The Recall Method in Social Surveys*, University of London, Institute of Education, London, 1979.

APPENDIX A

List of Schools Surveyed

Central TMO Serviced Schools

High schools

1 Blackwater
2 Emerald
3 Moranbah

Primary/secondary

4 Alpha
5 Clermont
6 Dysart
7 Springsure

Large primary

8 Anakie
9 Blackwater
10 Blackwater North
11 Capella
12 Duaringa
13 Emerald
14 Emerald North
15 Middlemount
16 Moranbah
17 Moranbah East
18 Woorabinda Community
19 Clermont – St Joseph's
20 Emerald – St Patrick's

Small primary

21 Alsace
22 Bauhinia
23 Bluff
24 Carmilla
25 Clarke Creek
26 Coppabella
27 Dingo
28 Flaggy Rock Creek
29 Gindie
30 Jericho
31 Kilcummin
32 Mackenzie River
33 Nebo
34 Oaky Creek Mine
35 Orion
36 Rolleston
37 St Lawrence
38 Tresswell
39 Valkyrie
40 West Hill
41 Springsure – Our Lady of the Sacred Heart

South-West TMO Serviced Schools

High schools

1 Charleville
2 Roma
3 St George

Primary/secondary

4 Cunnamulla
5 Dirranbandi
6 Injune
7 Mitchell
8 Surat
9 Tambo
10 Roma – St John's

Large primary

11 Charleville
12 Quilpie
13 Roma
14 Roma Junior
15 St George
16 Charleville – St Mary's
17 Cunnamulla – Sacred Heart

Small primary

18 Amby
19 Arcadia Valley
20 Augathella
21 Begonia
22 Bollon
23 Bymount East
24 Dunkeld
25 Eulo
26 Hebel
27 Morven
28 Mount Abundance
29 Muckadilla
30 Mungallala
31 St George – St Patrick's
32 Teelba
33 Thallon
34 Thargomindah
35 Wyandra
36 Wycombe
37 Yuleba Creek
38 Mitchell – St Patrick's
39 Quilpie – St Finbarr's

Schools not Serviced by a TMO

High schools

1 Goondiwindi
2 Miles
3 Longreach

Primary/secondary

4 Aramac
5 Barcaldine
6 Blackall
7 Cloncurry
8 Mornington Island
9 Normanton
10 Richmond
11 Tara
12 Taroom
13 Wallumbilla
14 Wandoan
15 Winton

Large primary (> 100)

16 Chinchilla
17 Goondiwindi
18 Longreach
19 Mary Kathleen
20 Miles
21 Chinchilla – St Joseph's
22 Cloncurry – St Joseph's

Small primary (< 100)

23 Barakula
24 Beardmore
25 Brigalow
26 Bungunya
27 Burketown
28 Burra Burri
29 Cameron Downs
30 Condamine
31 Croydon
32 Dajarra
33 Glenmorgan
34 Guluguba
35 Gunpowder
36 Hannaford
37 Hopeland
38 Ilfracombe
39 Isisford
40 Jackson
41 Karumba
42 Kindon
43 Kioma
44 Kogan
45 Kynuna

Small primary (< 100)

46 Maxwelton
47 McKinlay
48 Meandarra
49 Moonie
50 Muttaburra
51 Pelican
52 Prairie
53 Talwood
54 The Gums
55 Torrens Creek
56 Weengallon
57 Westmar
58 Yelarbon
59 Yuleba
60 Julia Creek – St Joseph's
61 Taroom – St Mary's
62 Winton – St Patrick's

Mount Isa Schools

High schools

1 Mount Isa State High School

Primary/secondary

2 St Kieran's CBC

Large primary

3 Barkley Highway
4 Happy Valley
5 Healey
6 Mount Isa Central
7 Sunset
8 Townview
9 St Joseph's

APPENDIX B

Questionnaire and Covering Letter for TMO Serviced Schools

G.P.O. Box 1605, Brisbane, 4001.

Evaluation Co-Ordinator
Ph. 224 7997

PRIORITY COUNTRY AREA PROGRAM

4TH FLOOR
127 CREEK STREET
BRISBANE

Refer to:

18 February 1982

Dear Principal,

Enclosed you will find a questionnaire relating to the operation of the technical maintenance service. This service has been operating for several years and we are now seeking to evaluate it. This survey will provide valuable information which will assist in the future operation of this service and which will be valuable to the Department of Education in planning future extensions of the technical maintenance service.

Please complete the enclosed questionnaire and return it in the attached envelope by 10 March, 1982.

The information you provide should relate to the operation of the service during 1981. Should there have been a complete change of staff at the school since last year please indicate this on the questionnaire instead of completing it.

Thank you for your co-operation.

Yours faithfully,

Cliff Fowler
Evaluation Co-ordinator

Evaluation of Technical Maintenance Service

A. SCHOOL _____ PRIMARY ☐ SECONDARY ☐

B. ENROLMENT OF CHILDREN _____ DATE _____

C. HOW OFTEN WAS YOUR SCHOOL VISITED DURING 1981? _____

D. HOW MANY OF THE TECHNICAL MAINTENANCE OFFICER'S VISITS WERE:

AT THE SCHOOL'S REQUEST ☐ AS PART OF THE TECHNICAL MAINTENANCE OFFICER'S REGULAR ITINERARY? ☐

E. DESCRIPTION OF REPAIRS CARRIED OUT DURING 1981.

Type of equipment repaired	Number of breakdowns	Total number of weeks out of action

F. WAS THERE ANY TECHNICAL EQUIPMENT IN NEED OF REPAIR WHICH THE TECHNICAL MAINTENANCE OFFICER DID NOT FIX?

YES ☐ NO ☐

If so:

Type of equipment	Reason

G. WHAT OTHER TYPE OF ASSISTANCE WAS GIVEN?

_____

_____

_____

H. HOW SATISFIED IS YOUR SCHOOL WITH THE SERVICE?

I. HOW CONCERNED WOULD YOU BE IF THIS SERVICE WAS DISCONTINUED?

J. HOW HAS THIS SERVICE ASSISTED YOU AND YOUR SCHOOL?

K. PLEASE ADD ANY ADDITIONAL COMMENTS.

APPENDIX C

Questionnaire and Covering Letter for non-TMO Serviced Schools

G.P.O. Box 1605, Brisbane, 4001.

Evaluation Co-Ordinator
Ph. 224 7997

PRIORITY COUNTRY AREA PROGRAM

4TH FLOOR
127 CREEK STREET
BRISBANE

Refer to:

1 March 1982

Dear Principal,

For some years, the Priority Country Area Program (see enclosed leaflet) has provided a technical maintenance service in selected areas of the State. To assist us in assessing the technical maintenance needs of schools not receiving this PCAP service, will you please complete the enclosed questionnaire. This survey will provide information which will be valuable to both PCAP and the Department of Education in planning any future extensions of the existing technical maintenance service.

Please complete the enclosed questionnaire and return it in the attached envelope by 19 March 1982.

The information you provide should relate to technical maintenance during 1981. Should there have been a complete change of staff at the school since last year please indicate this on the questionnaire instead of completing it.

Thank you for your co-operation.

Yours faithfully,

Cliff Fowler
Evaluation Co-ordinator

Evaluation of Technical Maintenance Needs

A. SCHOOL _____ PRIMARY ☐ SECONDARY ☐

B. ENROLMENT OF CHILDREN _____ DATE _____

C. DESCRIPTION OF REPAIRS TO TECHNICAL EQUIPMENT (E.G. TV SET, CASSETTE, VCR) CARRIED OUT DURING 1981?

Type of equipment repaired	Number of breakdowns	Total number of weeks out of action	Who carried out the repairs on your equipment?		
			Name	Occupation	Location

D. WAS THERE ANY TECHNICAL EQUIPMENT IN NEED OF REPAIR DURING 1981 WHICH WAS NOT FIXED?

YES ☐ NO ☐

If so:

Type of equipment not repaired	Reason

E. WHAT OTHER TYPE OF TECHNICAL ASSISTANCE WAS OBTAINED? (If any, from whom?)

_____

_____

_____

F. WHAT PROBLEMS DO YOU HAVE IN GETTING TECHNICAL EQUIPMENT REPAIRED?

_____

_____

_____

_____

G. HOW SATISFACTORY ARE YOUR EXISTING REPAIR ARRANGEMENTS?

_____

_____

_____

_____

PLEASE ADD ANY ADDITIONAL COMMENTS OVERLEAF

APPENDIX D

One Month from South-West TMO's Diary

Date	*School and Equipment Checked*
02/03/81	Wyandra State School – Fordigraph Spirit Duplicator – overhaul. Everything else OK.
02/03/81	Cunnamulla State School – Toshiba 3 in 1 – tapes slow seems OK. National 3 in 1 – Replaced RCA speaker plug. 2 small speaker boxes – both have scratchy speakers. Left cassette player and record player at State School for Eulo and rang Eulo from State School.
02/03/81	Bollon State School – Phillips VCR – replaced take up idler wheel. Everything else OK.
03/03/81	St George High School – Fordigraph Spirit Duplicator – overhaul, new paperfeeders, and new pad. 3M Heat Copier – supplied paper transport belt. HMV Record Player – soldered up dry joints on PCB.
03/03/81	St George Preschool – Everything OK.
03/03/81	St George State School – Fordigraph Spirit Duplicator – overhaul – new plumbing and paperfeeder. Fordigraph OHP – Freed fan. Checked 4 TV's – fitted 2 aerial plugs. National 3 in 1 – checked – monitor switch faulty? Supplied lead.
03/03/81	St George Convent – Sanyo Radio Cassette – fitted new belt. Sanyo Radio Cassette – shortened take up belt. Bell and Howell OHP – requires glasstop. Sharp Cassette Recorder – RD-460x – requires power lead.
04/03/81	Thallon State School – Hanimex projector – fitted bulb and aligned. Everything else OK.
04/03/81	Dirranbandi State School – JVC video recorder – replaced all rubbers – straightened bent carriage catch. Toshiba 3 in 1 – returned from repairs, reassembled; fitted 2RCA plugs to speakers – Bell and Howell language master – fitted micro switch (on order from August 1980). Supplied 2 Fordigraph Spirit Duplicator paperfeeders. Rang Hebel State School OK.
05/03/81	Surat State School – Fordigraph Spirit Duplicator – checked and adjusted. Sanyo Radio Cassette – replaced belt. Bell & Howell OHP – lubed motor. Toshiba 3 in 1 – fitted 2 RCA plugs to speakers. Met the teachers from Begonia and Wycombe schools at Surat State School. Next trip – call at Begonia, Wycombe. NOTE: Normal route now includes Wycombe, Begonia and Dunkeld, and Surat is now visited when in Roma Area.

06/03/81	Travel from Roma (overnight), to Charleville – rest of day in workshop.
09/03/81	Workshop in Charleville.
11/03/81	Charleville State School – JVC CTV – found 'video out' socket radiating pattern on picture – fitted shorting plug. JVC Video Recorder – on some old tapes has no vertical sync – crook tapes? (Took to Hagamyer in Brisbane over September holidays and we found the tape alignment needed adjusting). Brought in – National Radio Cassette – replaced belt – (returned). Brought in – Crown Corder – glued up case and checked – (returned). Brought in – HMV record player – ordered cartridge – (fitted and returned). Brought in (workshop) 7 Hanimex Cassette Players – repaired 6 and wrote off one (returned).
11/03/81	Charleville Convent – National 3 in 1 – ordered IC (fitted).
11/03/81	Charleville Preschool – made up lead – Phillips Speaker to stereo 6.5 mm.
11/03/81	Charleville High School – Everything OK.
12/03/81	Workshop in Charleville.
13/03/81	Workshop in Charleville.
16/03/81	Cunnamulla Convent – delivered Phillips VCR (repairs in Brisbane) went OK. Tape recorder – replaced belt and cleaned. Supplied 240v, 650w OHP bulb.
16/03/81	Cunnamulla State School – took back JVC CTV – picked up loan. It decided to play up – found broken ACC pot.
17/03/81	Cunnamulla Preschool – Fordigraph Spirit Duplicator – replaced paperfeeders and drive cogs, turned pad – missing paper weights? Telex record player – bringing in (returned). Hanimex Headphone – bringing in (beyond repair).
17/03/81	Wyandra State School – everything OK.
18/03/81	Morven State School – fitted aerial extension.
18/03/81	Muckadilla State School – everything OK.
18/03/81	Roma Junior State School – JVC Video Recorder – lubed pressure roller on tape transport ring. HMV Record Player – repaired lead off head. Repaired 2 Hanimex tape recorders. Hanimex 1800 Cassette – bringing in – order volume control (returned). Headphone – repaired plug.
19/03/81	Roma High School – 3 Fordigraph Spirit Duplicators – turned pads, adjusted and repaired plumbing, fitted 4 paperfeeders. 2 speaker boxes – fitted plug combinations.

19/03/81	Roma Primary Convent – Fordigraph OHP – order parts (fitted).
19/03/81	Roma State School – returned their JVC Video Recorder and picked up PCAP loan. Tape Recorder – refitted belt. Repaired two other tape recorders.
20/03/81	Mt Abundance State School – bringing in Sony 3 in 1 (returned).
20/03/81	Amby State School – everything OK.
20/03/81	Mitchell Convent – Hanimex Tape Recorder – checked OK.
20/03/81	Mitchell State School – bringing in Fordigraph Spirit Duplicator in bad state (overhaul – new cogs and plumbing) (returned).
20/03/81	Mungallala State School – checked slide projector.
23/03/81	Workshop
24/03/81	Workshop – Eromanga State School – Phillips Video Recorder was sent in – replaced lace up, cleaned turn table, replaced take up wheel – sent back.
25/03/81	Charleville State School – Listening Post – repaired broken wires. Supplied and fitted stylus to HMV gram.
25/03/81	Charleville Convent – repaired and cleaned 4 tape recorders. Bell and Howell OHP - lubed fan motor. TV Game – faulty power pack (repaired in workshop). Sewing Machine – reconnected power lead.
26/03/81	Workshop
27/03/81	Workshop
31/03/81	Charleville High School – checked various antique items. Hanimex Rondex Projector – lubed and checked.

APPENDIX E

Establishment Cost for Central TMO's Workshop

		$
Furnishings		250
Electrical work		799
Security		450
Fry-Check		725
Internal finish		230
Fire extinguisher		41
Equipment		
RF sweep and marker generator		364
Universal counter standard		1 760
RF signal generator		124
Audio signal generator		275
Audio cassette tension and alignment kit		15
5 VL alignment equipment		550
	Total	$5 583

APPENDIX F

PCAP Equipment Write-Off Format

PRIORITY COUNTRY AREA PROJECT

Phone – 827
Charleville

PO Box 47
Charleville, Q 4470

EQUIPMENT WRITE-OFF RECOMMENDATION

School _____ Date _____

Equipment Type _____

EDQUIP No. _____ Serial No. _____

Reason for Recommendation to Write-Off: _____

_____

_____

Comments: _____

_____

_____

Signed: _____

Itinerant Technical
Maintenance Officer
PCAP

S. R. HAMPSON, Government Printer, Queensland